

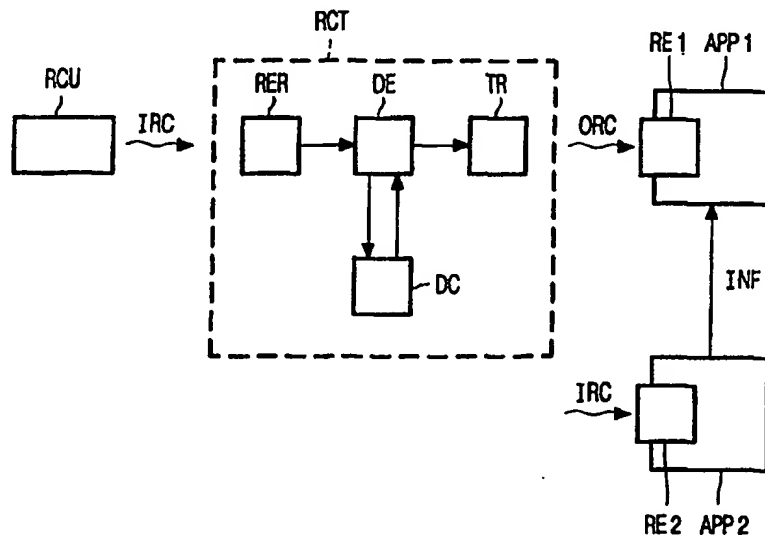


## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(21) International Application Number:</b> PCT/EP99/10413 <b>(22) International Filing Date:</b> 24 December 1999 (24.12.99) <b>(30) Priority Data:</b> 99200068.7      13 January 1999 (13.01.99)      EP <b>(71) Applicant:</b> KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL). <b>(72) Inventor:</b> SANTILLI, Daniele; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). <b>(74) Agent:</b> STERKEN, Antoon, J., E.; Internationaal Octrooibureau B.V., Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).		<b>(81) Designated States:</b> JP, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>

**(54) Title:** REMOTE CONTROL SYSTEM**(57) Abstract**

A remote control transmission unit (RCT) in accordance with the invention comprises a receiver (RER), a decision circuit (DC), and a transmitter (TR). The receiver (RER) receives input remote control commands (IRC) transmitted by a user-operable remote control unit (RCU). The transmitter (TR) transmits output remote control commands (ORC). The decision circuit (DC) determines whether the input remote control commands (IRC) belong to a predetermined group. The transmitter (TR) selectively re-transmits the input remote control commands (IRC) as output remote control commands (ORC) to a controllable apparatus (APP1) in dependence on whether the input remote control commands (IRC) belong to said predetermined group or not. Such a remote control transmission unit (RCT) is advantageously used in a system with a first controllable apparatus (APP1) with a certain function (for example, teletext) and a second controllable apparatus (APP2) which supplies an enhanced version of the certain function. The remote control transmission unit (RCT) is arranged in such a way that, on the one hand, a remote control receiver (RE1) of the first controllable apparatus (APP1) is able to receive the re-transmitted remote control commands (ORC), while, on the other hand, the input remote control commands (IRC) transmitted by the remote control unit (RCU) are shielded. The second controllable apparatus (APP2) receives all the input remote control commands (IRC).



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Remote control system.

The invention relates to a remote control system comprising a controllable apparatus and a remote control transmission unit, and to such a remote control transmission unit.

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It is general practice to control controllable apparatuses such as audio equipment and television receivers with a wireless remote control unit. The remote control unit transmits remote control commands in a coded form to control several functions of the controllable apparatus. The remote control commands may be grouped in clusters  
10 corresponding to a certain functionality of the controllable apparatus. For example, in a television receiver equipped with a teletext decoder, the teletext commands may form such a group of remote control commands.

When several controllable apparatuses comprise the same functionality, for example, a VCR and a television receiver both with a teletext decoder, the group of remote  
15 control commands for controlling this same functionality needs to have different codes to prevent undesirable interaction. If the controllable apparatuses use the same transmission standard and the same coding standard, an extra knob on the remote control unit enables that controllable apparatus to be selected for which the function should be controlled. If the standards used differ, several remote control units are required, one for each controllable  
20 apparatus.

It is, inter alia, an object of the invention to provide a remote control transmission unit which enables, in a system of several controllable apparatuses with the same  
25 function, allows the use of the existing remote control unit of one of the controllable apparatuses.

To this end, a first aspect of the invention provides a remote control unit as claimed in claim 1. A second aspect of the invention provides a system as claimed in claim 3. Advantageous embodiments are defined in the dependent claims.

The remote control transmission unit according to the invention comprises a receiver, a decision circuit, and a transmitter. The receiver receives input remote control commands transmitted by a user-operable remote control unit. The transmitter transmits output remote control commands. The remote control transmission unit may further comprise a  
5 decoder which decodes the input remote control commands. The decision circuit determines whether the input remote control commands belong to a predetermined group. The transmitter selectively re-transmits the input remote control commands to the controllable apparatus in dependence on whether the input remote control commands belong to said predetermined group or not. For example, the receiver of the remote control transmission unit re-transmits all  
10 remote control commands except all teletext commands.

Such a remote control transmission unit is advantageously used in a system with a first controllable apparatus (for example, a television receiver with a teletext decoder) and a second controllable apparatus (for example, a teletext decoder supplying upgraded textual and graphical information to an input of the television receiver to be displayed instead  
15 of the teletext information of the teletext decoder). The remote control transmission unit is arranged in such a way that, on the one hand, a remote control receiver of the first controllable apparatus is able to receive the re-transmitted remote control commands, while, on the other hand, the input remote control commands transmitted by the remote control unit are shielded. With respect to the above-mentioned example, when a non-teletext command is transmitted by  
20 the remote control unit, this command reaches the remote control receiver of the first controllable apparatus to perform the desired operation. When the remote control unit transmits a teletext remote control command, this command will not reach the remote control receiver of the first controllable apparatus and consequently will not control the related teletext functionality. The second controllable apparatus receives all the input remote control  
25 commands and will thus act accordingly when a remote control command is transmitted for controlling the related teletext function of the second controllable apparatus.

The remote control unit according to the invention allows addition of a second controllable apparatus with an enhanced version of a functionality already available in the first controllable apparatus without the need for supplying an adapted or a second remote control  
30 unit.

These and other aspects of the invention are apparent from and will be elucidated with reference to the embodiments described hereinafter.

In the drawings:

Fig. 1 shows a block diagram of a first embodiment of the invention, and

Fig. 2 shows a block diagram of a second embodiment of the invention:

In the Figures, the same references designate the same items or signals.

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Fig. 1 shows a block diagram of a first embodiment of the invention.

A user-operable remote control unit RCU transmits input remote control commands IRC further referred to as input commands in any of many known ways. For example, the commands may be coded as digital words of bits, an infrared beam with a certain frequency is transmitted during an on-bit, and no infrared beam is transmitted during an off-bit. A unique code is assigned to each command.

A remote control command transmission unit RCT (further referred to as transmission unit) comprises a remote control receiver RER (further referred to as receiver), a decoder DE, a decision circuit DC, and a remote control command transmitter TR (further referred to as transmitter).

The receiver RER receives the input commands IRC transmitted by the remote control unit RCU. The transmitter TR transmits output remote control commands ORC further referred to as output commands to a remote control receiver RE1 of the first controllable apparatus APP1. A decoder DE decodes the input commands, and the decision circuit DC determines whether a received and decoded input remote command belongs to a predetermined group of commands. The transmitter TR selectively re-transmits an input command IRC to the first controllable apparatus APP1 in dependence on whether this input command IRC belongs to said predetermined group or not. For example, the receiver of the transmission unit RCT re-transmits all remote control commands except all teletext commands. In an embodiment of the invention as shown in Figure 1, the decision circuit DC receives decoded input commands from the decoder DE and supplies a signal to the decoder DE to control the decoder DE in such a way that it only supplies codes to the transmitter TR when these codes are allowed to be re-transmitted. The decoder DE and the decision circuit may be a microcomputer. The microcomputer collects the incoming bits of the command words, compares whether a command word is equal to one of a predetermined group of words stored in a memory and sends bits forming a word to the transmitter TR only when this word is allowed to be re-transmitted.

The transmission unit RCT is arranged in such, a way that, on the one hand, the remote control receiver RE1 of the first controllable apparatus APP1 is able to receive the re-transmitted remote control commands, while, on the other hand, the input commands IRC transmitted by the remote control unit RCU are shielded. For example, in a system in which

5 the commands are transmitted with infrared light pulses, the transmission unit RCT is a thin disc sealed in front of an infrared light-sensitive element of the remote control receiver RE1. An infrared light-transmitting element of the transmitter TR is arranged at the side of the disc facing the infrared light-sensitive element of the remote control receiver RE1. The disc shields the infrared light emitted by the remote control unit RCU. An infrared light-sensitive element

10 of the receiver RER is arranged at the side not facing the remote control receiver RE1 to receive the commands from the remote control unit RCU. With respect to the above-mentioned example, when a non-teletext command is transmitted by the remote control unit RCU, this command reaches the remote control receiver RE1 of the first controllable apparatus APP1 via the transmission unit RCT to perform the desired operation. When the

15 remote control unit RCU transmits a teletext remote control command, this command will not reach the remote control receiver RE1 of the first controllable apparatus APP1 and, consequently, will not control the related teletext functionality.

The second controllable apparatus APP2 comprises a remote control receiver RE2 to receive all the input remote control commands IRC and will thus act accordingly when

20 a remote control command is transmitted for controlling the related functionality. For example, the second controllable apparatus APP2 is a teletext decoder which supplies upgraded textual and graphical information INF to an input of the first controllable apparatus APP1 (which, in this example, is a television receiver) to display this information instead of the teletext information generated in the first controllable apparatus APP1.

25 The transmission unit RCT according to the invention allows addition of a second controllable apparatus APP2 with an enhanced version of a functionality already available in the first controllable apparatus APP1, and allows control of this system with the remote control unit RCU originally supplied with the first controllable apparatus APP1, thus, without the need for supplying an adapted or a second remote control unit.

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Fig. 2 shows a block diagram of a second embodiment of the invention. The system shown in Figure 2 differs from the system shown in Figure 1 in that the second controllable apparatus APP2 is not equipped with the remote control receiver RE2. The input commands IRC are supplied to the second controllable apparatus APP2 via a hardware link

between the transmission unit RCT and the second controllable apparatus APP2. The transmission unit RCT comprises an output circuit OC receiving the input commands IRC as received by the receiver RER, and an output terminal OT connectable via the hardware link to an input terminal IT of an input circuit INC of the second controllable apparatus APP2.

5                   It is also possible to direct only the relevant input commands IRC via the hardware link to the input terminal IT.

                  It should be noted that the above-mentioned embodiments illustrate rather than limit the invention, and that those skilled in the art will be able to design many alternative embodiments without departing from the scope of the appended claims. Instead of infrared  
10   beams, also radio waves may be used to transmit the commands.

                  In the claims, any reference signs placed between parentheses shall not be construed as limiting the claim. The word "comprising" does not exclude the presence of elements or steps other than those listed in a claim. The invention may be implemented by means of hardware comprising several distinct elements, and by means of a suitably  
15   programmed computer. In the device claim enumerating several means, several of these means may be embodied by one and the same item of hardware.

## CLAIMS:

1. A remote control transmission unit (RCT) comprising:
  - a receiver (RER) for receiving input remote control commands (IRC) transmitted by a user-operable remote control unit (RCU),
  - a decision means (DC) for determining whether the input remote control commands (IRC) belong to a predetermined group, and
  - a transmitter (TR) for selectively re-transmitting the input remote control commands (IRC) to a controllable apparatus (APP1) in dependence on whether the input remote control commands (IRC) belong to said predetermined group or not.
2. A remote control transmission unit (RCT) as claimed in claim 1, characterized in that the remote control transmission unit (RCT) further comprises an output circuit (OC) for supplying the input remote control commands (IRC) to a further controllable apparatus (APP2).
3. A system comprising a controllable apparatus (APP1) and a remote control transmission unit (RCT),
  - the remote control transmission unit (RCT) comprising:
    - a receiver (RER) for receiving input remote control commands (IRC) transmitted by a remote control unit (RCU),
    - a decision means (DC) for determining whether the input remote control commands (IRC) belong to a predetermined group,
    - a transmitter (TR) for selectively re-transmitting the input remote control commands (IRC) to the first controllable apparatus (APP1) in dependence on whether the input remote control commands (IRC) belong to said predetermined group or not,
    - the controllable apparatus (APP1) comprising a remote control receiver (RE1) for receiving the re-transmitted input remote control commands (OCR), the remote control transmission unit (RCT) being arranged with respect to said remote control receiver (RE1) to shield the input remote control commands (IRC).



4. A system as claimed in claim 3, characterized in that the system comprises a further controllable apparatus (APP2) with an input circuit (INC) for receiving the input remote control commands (IRC).
- 5 5. A system as claimed in claim 4, characterized in that said input circuit (INC) comprises a further remote control receiver (RE2) for receiving the input remote control commands (IRC).
6. A system as claimed in claim 4, characterized in that said input circuit (INC)  
10 comprises an input terminal (IT), and in that the remote control transmission unit (RCT) comprises an output terminal (OT) being connectable via a hardware link to the input terminal (IT) for supplying at least part of the input remote control commands (IRC) to the input terminal (IT).

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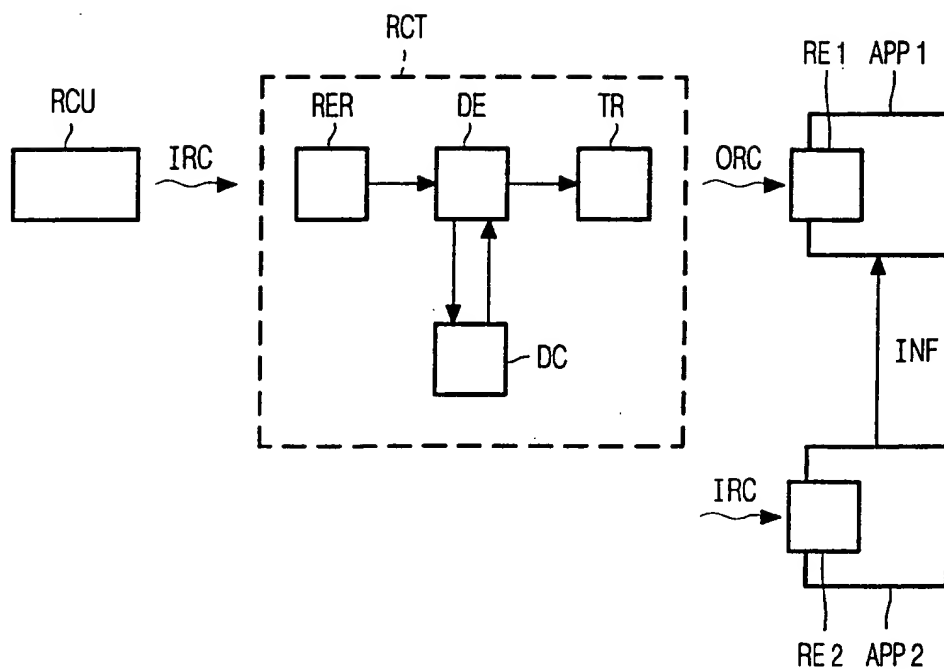


FIG. 1

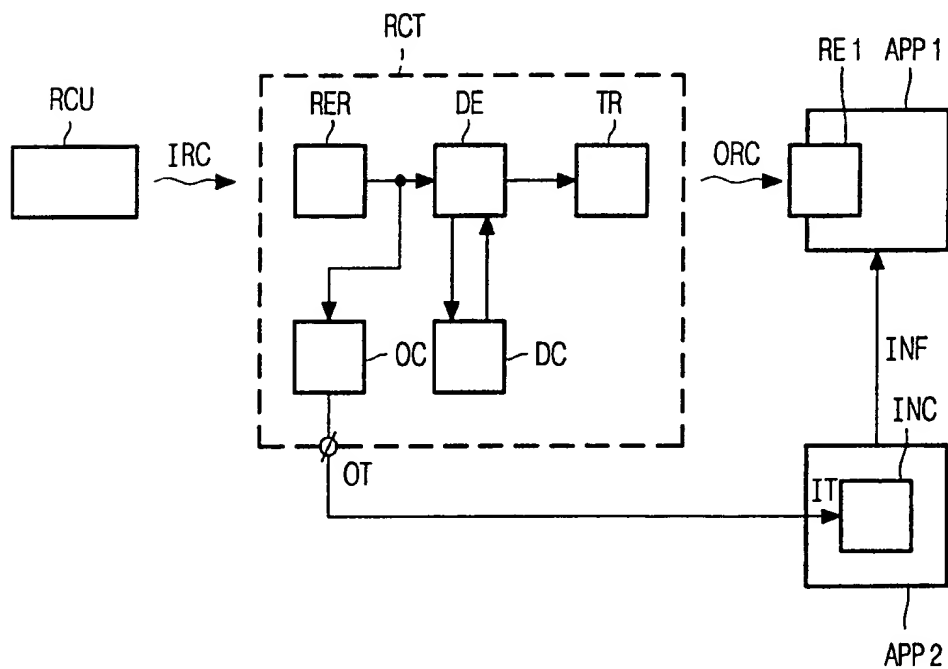


FIG. 2

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 99/10413

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04N5/44 //H04N7/088

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

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IPC 7 H04N H04B H03J

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## C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	EP 0 624 958 A (SONY CORPORATION) 17 November 1994 (1994-11-17)	1-6
Y	column 17, line 20 -column 20, line 51 column 1, line 26 -column 2, line 57	4-6
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X	US 4 626 848 A (EHLERS R.) 2 December 1986 (1986-12-02) the whole document	1-3
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A	US 5 055 937 A (YAMADA Y. ET AL) 8 October 1991 (1991-10-08) the whole document	1

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Information on patent family members

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